

What is claimed is:

1. An optical disc comprising:
 a substrate having flat portions and micro-embossments, which are track guides,
 protruding from surfaces of the flat portions;
 a reflective layer formed on the surfaces of the flat portions and the mirror-embossments
 of the substrate;
 a dielectric layer formed on the reflective layer;
 a recording layer formed on the dielectric layer; and
 a protective layer formed on the recording layer.

2. The optical disc of claim 1, wherein said micro-embossments are hills of a peaked
 hood shape, respectively.

3. The optical disc of claim 2, wherein said hills of a respectively peaked hood shape
 each have a height of $\lambda/4$ from the surfaces of the flat portions, in which is a wavelength of
 light compatible with the optical disc.

4. The optical disc of claim 1, wherein a surface of said protective layer opposite that
 formed on the recording layer is flat.

5 The optical disc of claim 4, wherein a thickness of said protective layer is thicker
 than those of said micro-embossments.

6. The optical disc of claim 5, wherein said protective layer is transparent.

1 ~~7.~~ The optical disc of claim 1, wherein said substrate has a first side having the flat
2 portions and the micro-embossments, said substrate further comprising a second side opposite
3 and substantially parallel to the first side and having second flat portions and second micro-
4 embossments, which are track guides, protruding from surfaces of the second flat portions, the
5 optical disc further comprising:

6 a second reflective layer formed on the surfaces of the second flat portions and the
7 second micro-embossments of the second side of the substrate;

8 a second dielectric layer formed on the second reflective layer;

9 a second recording layer formed on the second dielectric layer; and

10 a second protective layer formed on the second recording layer.

11 ~~8.~~ The optical disc of claim 7, wherein said micro-embossments and the second
12 micro-embossments are hills of the peaked hood shape, respectively.

13 ~~9.~~ The optical disc of claim 8, wherein the hills of a respectively peaked hood
14 shape have a height of $\lambda/4$ from corresponding ones of the surfaces of the flat portions and the
15 second flat portions, in which λ is a wavelength of light compatible with the optical disc.

16 ~~10.~~ The optical disc of claim 7, wherein outer surfaces of the protective layer and
17 the second protective layer extend further from the substrate than peaks of the hills.

18 ~~11.~~ The optical disc of claim 3, wherein a thickness of said protective layer is
19 thicker than those of said micro-embossments.

1 12. An optical disc comprising:
 2 a substrate having a first surface with first protrusions extending from the first surface,
 3 wherein the first protrusions are track guides for data.

1 13. The optical disc of claim 12, wherein the first surface has first flat portions
 2 between the first protrusions.

1 14. The optical disc of claim 13, wherein the first protrusions are hills of a
 2 respectively peaked hood shape.

1 15. The optical disc of claim 14, wherein each hill has a height of $\lambda/4$ extending
 2 from the first flat portions, wherein λ is a wavelength of light to record and/or reproduce the
 3 data from the optical disc.

1 16. The optical disc of claim 12, further comprising:
 2 a first reflective layer formed on the first surface and the first protrusions;
 3 a first dielectric layer formed on the first reflective layer;
 4 a first recording layer formed on the first dielectric layer; and
 5 a first protective layer formed on the first recording layer.

1 17. The optical disc of claim 16, wherein the first protective layer is formed further
 2 from the first surface than peaks of the first protrusions.

1 18. The optical disc of claim 17, wherein the first protective layer has a flat outer
 2 surface.

1 19. The optical disc of claim 17, wherein the recording layer has grooves
 2 corresponding to and above the protrusions, wherein the grooves have a depth substantially as
 3 a height of the protrusions.

1 20. The optical disc of claim 15, further comprising:
 2 a reflective layer formed on the first surface and the protrusions;
 3 a dielectric layer formed on the reflective layer;
 4 a recording layer formed on the dielectric layer; and
 5 a protective layer formed on the recording layer.

1 21. The optical disc of claim 19, wherein the protective layer is formed further from
 2 the first surface than the peaks of the protrusions.

1 22. The optical disc of claim 12, further comprising:
 2 the substrate having a second surface opposite to and substantially parallel to the first
 3 surface with second protrusions extending from the second surface.

1 23. The optical disc of claim 15, further comprising:
 2 the substrate having a second surface opposite to and substantially parallel to the first
 3 surface with second protrusions extending from the second surface, the second surface having
 4 second flat portions between the second protrusions;
 5 wherein the second protrusions are hills of a respectively peaked hood shape, each hill
 6 having a height of $\lambda/4$ extending from the second flat portions.

Sub B3
24. The optical disc of claim 16, further comprising:
the substrate having a second surface opposite to and substantially parallel to the first
3 surface with second protrusions extending from the second surface;
4 a second reflective layer formed on the second surface and the second protrusions;
5 a second dielectric layer formed on the second reflective layer;
6 second recording layer formed on the second dielectric layer; and
7 a second protective layer formed on the second recording layer.

1 25. The optical disc of claim 24, wherein the first protective layer is formed further
2 from the first surface than peaks of the first protrusions.

Sub B3
1 26. The optical disc of claim 24, wherein the first protective layer has a flat outer
2 surface.

Sub B3
1 27. An optical disc which stores data, comprising:
2 a substrate having a first surface; and
3 first protrusions extending from the first surface, wherein the first protrusions are track
4 guides for the data.

1 28. The optical disc of claim 27, wherein the first protrusions are integrally formed
2 of the substrate.

Sub B3
1 29. The optical disc of claim 27, wherein the substrate has a second surface opposite
2 and substantially parallel to the first surface, the optical disc further comprising second
3 protrusions extending from the second surface, wherein the second protrusions are track guides
4 for the data.

1 30. The optical disc of claim 28, wherein the substrate has a second surface opposite
2 and substantially parallel to the first surface, the optical disc further comprising second
3 protrusions extending from the second surface, wherein the second protrusions are track guides
4 for the data and are integrally formed of the substrate.

1 31. A method of forming an optical disc which stores data, comprising:
2 stamping a substrate to have first protrusions extending from a first surface of the
3 substrate, wherein the first protrusions are track guides for the data.

1 32. The method of claim 31, further comprising:
2 forming a first reflective layer on the first surface and the first protrusions;
3 forming a first dielectric layer on the first reflective layer;
4 forming a first recording layer on the first dielectric layer; and
5 forming a first protective layer on the first recording layer.

1 33. The method of claim 32, wherein the first protective layer is further from the
2 first surface than peaks of the first protrusions.

1 34. The method of claim 31, further comprising:
2 stamping the substrate to have second protrusions extending from a second surface of
3 the substrate, wherein the second protrusions are track guides for the data.

1 35. The method of claim 32, further comprising:
2 stamping the substrate to have second protrusions extending from a second surface of
3 the substrate, wherein the second protrusions are track guides for the data;

4 forming a second reflective layer on the second surface and the second protrusions;
 5 forming a second dielectric layer on the second reflective layer;
 6 forming a second recording layer on the second dielectric layer; and
 7 forming a second protective layer on the second recording layer.

1 36. The method of claim 35, wherein the second protective layer is further from the
 2 second surface than peaks of the second protrusions.

1 37. A method of recording data on an optical disc including a substrate having a
 2 surface with protrusions extending from the surface, wherein the protrusions are track guides
 3 for the data, a reflective layer formed on the surface and the protrusions, a dielectric layer
 4 formed on the reflective layer, a recording layer formed on the dielectric layer, and a protective
 5 layer formed on the recording layer, the method comprising:

6 moving an objective lens of a flying head to a distance of $\lambda/10$ to $\lambda/5$ from the
 7 protective layer; and

8 forming an optical spot at a bottom of the objective lens to generate a near field, thereby
 recording the data on the recording layer based upon the protrusions.

1 38. A method of reproducing data from an optical disc including a substrate having
 2 a surface with protrusions extending from the surface, wherein the protrusions are track guides
 3 for the data, a reflective layer formed on the surface and the protrusions, a dielectric layer
 4 formed on the reflective layer, a recording layer formed on the dielectric layer and storing the
 5 data, and a protective layer formed on the recording layer, the method comprising:

6 moving an objective lens of a flying head to a distance of $\lambda/10$ to $\lambda/5$ from the
 7 protective layer; and

8 forming an optical spot at a bottom of the objective lens to generate a near field; and

9 reflecting the optical spot from the reflective layer after passing through the cording
10 layer, using the protrusions, to reproduce the data.